National Aeronautics and Space Administration

Lyndon B. Johnson Space Center
Houston, Texas

Space capades

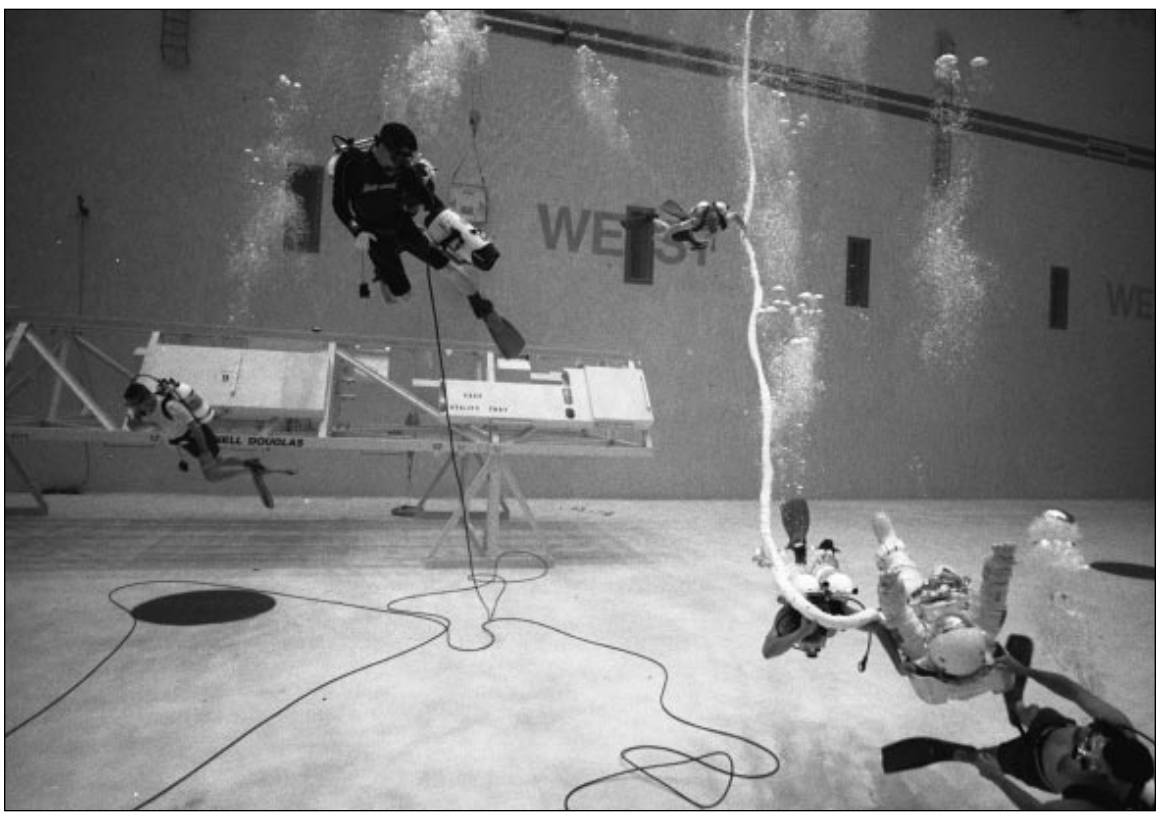
JSC engineer Robert Trevino is in Antarctica looking for space walk comparisons. Story on Page 3.

Mars marathon

The Mars Global Surveyor spacecraft is on its way toward a September 1997 rendezvous. Story on Page 4.

Space News Roundup

Vol. 35 **November 15, 1996** No. 45



JSC Photo by Mark Sowa

Astronaut Jerry Ross makes the first suited astronaut dive in JSC's spacious new Neutral Buoyancy Laboratory in the Sonny Carter Training Facility.

Premiere training facility at ready

Neutral Buoyancy Lab well on way toward certification

By Kelly Humphries

JSC's new Neutral Buoyancy Laboratory is well on the way toward acceptance and integration into the space shuttle and space station training flows following its first two suited astronaut tests.

Astronaut Jerry Ross, who chairs the NBL Operational Readiness Inspection committee, became the first astronaut to make a suited dive late last month and followed that the next day by joining colleague Linda Godwin in the first double-suited astronaut dive.

The tests were the culmination of a concerted year-long team effort leading up to an early December signing in which NASA will take possession from McDonnell Douglas, the facility's builder and current owner. That date is more than a month earlier than had been planned at first, but it will save the government about $700,000 and allow the NBL team to support a January joint integrated simulation of space walks for the second Hubble Space Telescope servicing flight as its first operational mission training session.

"The suited runs were a demonstration that, technically, we're ready for operation," said Malcolm Johnson, the NBL group lead for the Space and Life Sciences Directorate and its Flight Crew Support Division.

What was the hallmark of the accelerated effort?

"Teamwork—you better believe it," Johnson said. "We had a lot of folks doing a lot of super jobs on different components and the NBL just came together smoothly. Each person had assigned responsibilities and they had authority to take care of their responsibilities and they did it. We evolved into a fairly close-knit team and the pride of successful accomplishment is shared by many folks."

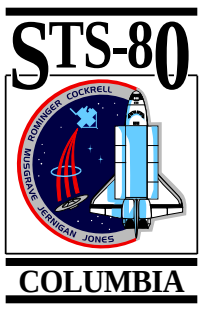
Please see **NBL**, Page 4

Columbia faces Atlas, weather hurdles today

By James Hartsfield

The countdown clock for *Columbia* began ticking Tuesday toward a launch planned for 1:50 p.m. CST today on STS-80, although weather and a possible delay in an Atlas commercial launch could force the shuttle to wait.

As of Wednesday, forecasters were calling for only a 10 percent chance of acceptable launch weather today as Kennedy Space Center anticipated strong winds. The same weather pattern was forecast for Saturday and Sunday, although the probability of favorable conditions increases to 20 percent and 30 percent, respectively.



If delayed from a Wednesday launch attempt, the commercial Atlas launch could also force *Columbia* to move to Saturday for the STS-80 launch. *Columbia*'s launch time would be 1:51 p.m. CST on both Saturday and Sunday.

Shuttle managers cleared *Columbia* for launch following a Monday review of the findings from an extensive analysis of erosion seen on one solid rocket booster nozzle from the September flight of *Atlantis* on STS-79.

Engineers concluded that the most likely cause for the unusual erosion pattern seen on the STS-79 booster was a pocketing erosion effect triggered by slight ply distortions in the ablative material of the nozzle throat ring and normal variations in other material properties. The throat ring is manufactured by wrapping the ablative material in a criss-cross fashion and curing it at elevated temperatures and pressures. In the curing process, it is believed that the material near the surface may shift slightly, creating distortions. Hot gas during the operation of the motor then caused the pocketing effect and uneven wear seen on STS-79. However, the analysis showed that even with ply distortions at the worst possible levels, there still is a significant safety margin for the operation of the motor.

"I am very proud of this shuttle team and their efforts in reviewing the nozzle issue," Shuttle Program Manager Tommy Holloway said. "I believe we now have a good understanding of the phenomenon seen on STS-79 and are ready for *Columbia*'s launch. The extra time we took to make sure all of the data was properly reviewed and analyzed is indicative of the fact that safety remains the number one priority of this program."

A launch on time today would lead to a landing of *Columbia* at 6:30 a.m. CST Dec. 1.

Meanwhile, *Atlantis* is being readied for a mid-January 1997 launch on STS-81, the fifth shuttle-Mir docking mission, in KSC's Bay 3 shuttle hangar. In the Vehicle Assembly Bldg. this week, the STS-81 fuel tank was mated to the solid rockets. In the Bay 2 shuttle hangar, *Discovery* is on track for a February 1997 launch on STS-82, the second Hubble Space Telescope servicing flight.

JSC urged to join Texans in today's focus on recycling

The Texas Natural Resource Conservation Commission is sponsoring a "Texas Recycles Day" today and JSC employees are encouraged to begin, enhance or support recycling programs both at work and home.

The purpose of Texas Recycles Day is to educate Texans about the environmental and economic benefits of recycling and to stimulate recycling activity. Last year more than 80,000 businesses, organizations and individuals submitted pledge cards to start or increase recycling programs. More than 150 events took place across the state last year.

JSC has programs for recycling paper, cardboard, aluminum cans, scrap metal, automotive-type batteries, tires and toner cartridges. Each year JSC recycles tons of material resulting in reduced pollution and less cost to the government.

"Last year more than 8,790 pounds of aluminum were recycled at JSC," said Teresa Sullivan, JSC Exchange Operations manager. "That translates into 2.5 million cans."

The average Texan throws away more than six pounds of garbage a day. More than 22 million tons of garbage go to Texas landfills each year. Up to 80 percent of that waste is potentially recyclable. By simply recycling, Texans can reduce the burden on landfills, save tax dollars, preserve natural resources and protect Texas landscapes.

The Texas Natural Resource Conservation Commission has several recycling suggestions: Think before throwing: reduce, reuse, recycle. Add new recyclable materials to home, office or school recycling program. Commit to buy and use recycled products at home and work. Start a compost pile with yard trimmings and food scraps. At home, take used motor oil and oil filters to one of the many approved collection centers. Leave grass clippings on the lawn as fertilizer.

For more information on JSC recycling programs call Mike Scott at x33208. For more information on the Texas Natural Resource Conservation Commission visit its home page at: http://www.tnrcc.state.tx.us/

Blaha passing along knowledge

By Natasha Calder

America's resident astronaut on the Russian Mir Space Station said this week that he is learning how to operate on a space station and train for station flights.

"Every now and then, about once a week, I send quite a lot of information down to people in Houston who are working on our space station to help them do the things they need to do to put into our operational concepts for that new International Space Station," said John Blaha, now in his eighth week on board.

The crew schedule slowed near the end of last week as the Russian's celebrated the anniversary of the October revolution, but the work pace is now back to normal with work continuing on a variety of experiments.

Blaha, along with Mir 22 Commander Valery Korzun and Flight Engineer Alexander Kaleri, conducted monthly microbial sampling of the air surfaces, water supply and themselves, to monitor bacteria levels.

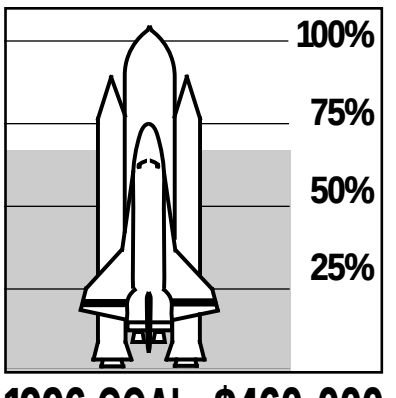
This week, the crew also conducted the second in-flight experiment to collect urine and saliva for a metabolic study related to protein metabolism and kidney stone risk. This experiment is done routinely within 14 days of a planned undocking of a Russian or American spacecraft so that the excess urine can be properly disposed.

The crew also continued to perform routine Earth observations and photography over the week to monitor changes on the Earth's surface from space, and to photograph events such as hurricanes, plankton blooms and volcanic eruptions.

The next Progress resupply vehicle that will carry the crew's Christmas presents from home is scheduled for launch Nov. 20 and will dock to the station two days later.

The space shuttle *Atlantis* is set to return to Mir early next year on STS-81 to bring Blaha home from his four-month mission and deliver astronaut Jerry Linenger. It

Please see **STS-81**, Page 4



1996 GOAL: $460,000

Texas Tech honors Gemini astronaut

Texas Tech University recently honored Gemini-era Astronaut Charles Bassett for his contributions to space technology with the dedication of an electrical engineering research laboratory.

The electrical engineering research annex that now bears Bassett's name has been used by faculty and graduate students for more than 15 years, supporting studies in the Department of Electrical Engineering at Texas Tech, where Bassett earned his undergraduate degree in 1960.

"This is a fitting tribute to a man who dedicated his life to pursuing the dream of space flight," said NASA Administrator Daniel Goldin.

Please see **TECH**, Page 4